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Subulicystidium curvisporum sp. nov. (*Hymenochaetales, Basidiomycota*) from the Patagonian Andes

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Abstract — *Subulicystidium curvisporum* is described as a new species from the Patagonian Andes forests. It differs from its closest related species, *S. longisporum* and *S. perlongisporum*, in considerably longer and characteristically curved basidiospores. A key to all known *Subulicystidium* species is included, and the new species is compared with other species in the genus.

Key words — Argentina, corticioid fungi, *Nothofagus dombeyi*, Patagonia, taxonomy

Introduction

The genus *Subulicystidium* Parmasto comprises 9 described species (Duhem & Michel 2001, Parmasto et al. 2004). *Subulicystidium* is an easily distinguished genus characterized above all by the distinctive cystidia encrusted with rectangular crystals arranged crosswise to the main axis ("two rows of "ribbon-like" structures," Jülich 1975), the presence of repetobasidia, and by the cylindrical to acicular basidiospores sharing a more or less vermiform shape. Molecular studies by Hibbett & Binder (2002) and Larsson et al. (2004) show that *Subulicystidium* is closely related to *Tubulicium vermiferum* (Bourdot) Oberw. ex Jülich, and both are included in the trechisporoid clade next to other *Trechispora* P. Karst. species, even if they do not share the same morphological and ecological characters.

As a result of collecting trips in the Patagonian Andes forests of southern Argentina, we have found growing on *Nothofagus dombeyi* (Mirb.) Oerst. (*Nothofagaceae*) a *Subulicystidium* species with long acicular and characteristically curved basidiospores, distinct from previously described species, which we propose as new below. Some species in *Tulasnella* J. Schröt. have spirally curved

basidiospores that often produce secondary spores by replication, but basidia are differentiated by the large globose to clavate sterigmata. We considered the possibility that a *Tulasnella* species inhabited the same substrata where the *Subulicystidium* grew, but we have not found any trace of a tulasnelloid fungus. *Tulasnella helicospora* Raunk., although somewhat inconspicuous, clearly differs in the grayish pruinose basidiome, more variably shaped wider basidiospores with homogeneous oily contents that germinate secondary spores, and typical basidia with obclavate distally tapered sterigmata.

Material & methods

For light microscopic studies, samples were mounted in 3% potassium hydroxide (KOH), Melzer's reagent (IKI), and 0.1% cotton blue in 60% lactic acid to determine cyanophily of basidiospores. The term Q expresses the ratio Length/Width of the basidiospore size. Line drawings were made with a camera lucida attachment. Specimens are deposited in the herbarium of the "Centro de Investigación y Extensión Forestal Andino-Patagónico" (CIEFAP, Esquel, Argentina), BAFC, and SALA.

Taxonomy

Subulicystidium curvisporum Gorjón, Gresl. & Rajchenb., **sp. nov.** Plates 1,2

MycoBank MB 561691

Ab Subulicistidium longisporum *et* Subulicistidium perlongisporum *differt basidiosporae longioribus et recurvis.*

Holotypus: Argentina, Chubut, Los Alerces National Park, Alerzal milenario (42°36′34″S 71°53′28″W), 530 m a.s.l., on decayed wood of *Nothofagus dombeyi*, 3 May 2010, leg. S.P.Gorjón coll. 2689. **Holotype**, BAFC; **isotypes**, SALA and herbarium of Centro de Investigación y Extensión Forestal Andino-Patagónico.

Etymology: *curvisporum,* Latin, referring to the curved shape of the basidiospores.

Basidiomata annual, fragile, resupinate, effused, arachnoid, smooth and finely velutinous due to the protruding cystidia, white to light grey, margin abrupt. hyphal system monomitic, generative hyphae with clamps, thin- to thick-walled, 3–4 µm wide, smooth or encrusted with amorphous hyaline material. cystidia numerous, subulate, 70–80(–100+) × 3–4 µm, projecting 60–80 µm above the basidia, encrusted over all the length, except in the smooth apical part, with rectangular crystals circularly to spirally arranged along the cystidial wall. basidia urniform, basally clamped, some of them repetitive, thin-walled, 12–15 × 5–7 µm, with 4 stout sterigmata. basidiospores long acicular, spirally curved, with a vermiform shape, smooth, thin-walled, (25–)27–35(–38) × (1.8–)2–2.5(–2.8) µm, inamyloid, nondextrinoid, acyanophilous, guttulate (Plates 1, 2).

Distribution and Ecology —*Subulicystidium curvisporum* is only known from the Patagonian Andes forest of Argentina (Valdivian rainforest).

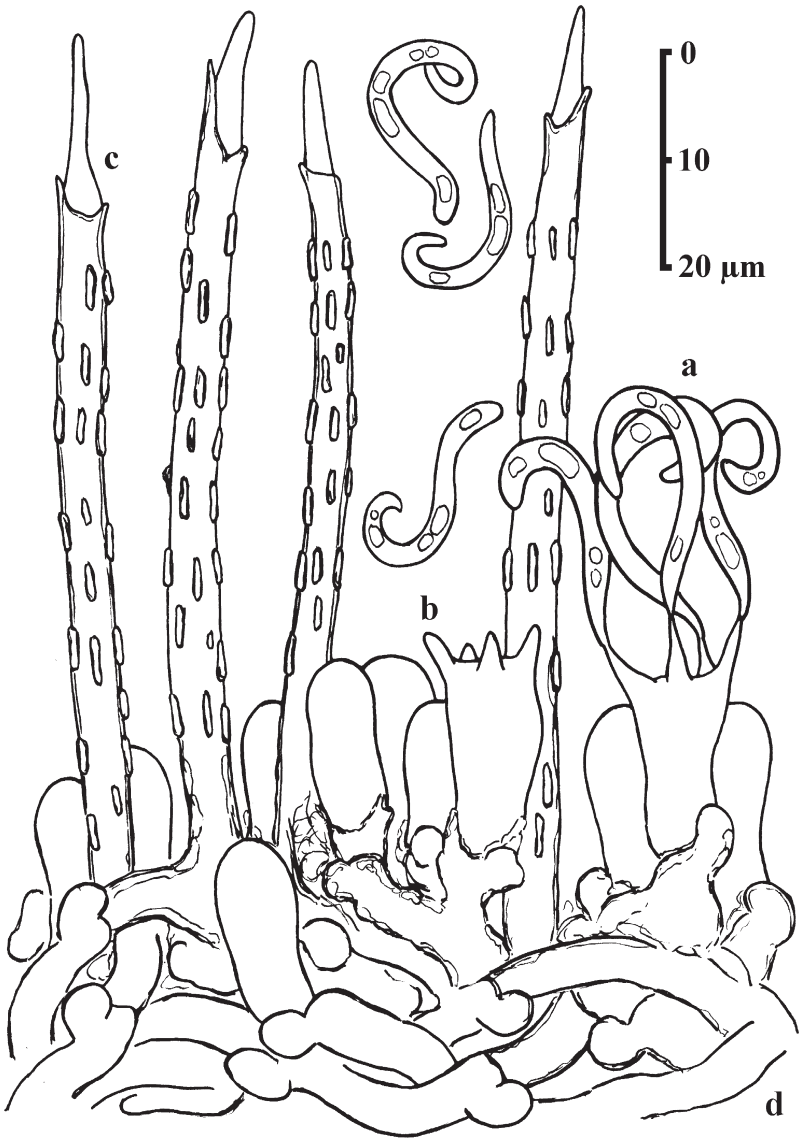

Plate 1. *Subulicystidium curvisporum*.
Hymenial elements— a) basidiospores, b) basidia, c) cystidia, d) generative hyphae.
coll. S.P.Gorjón 2689, holotype.

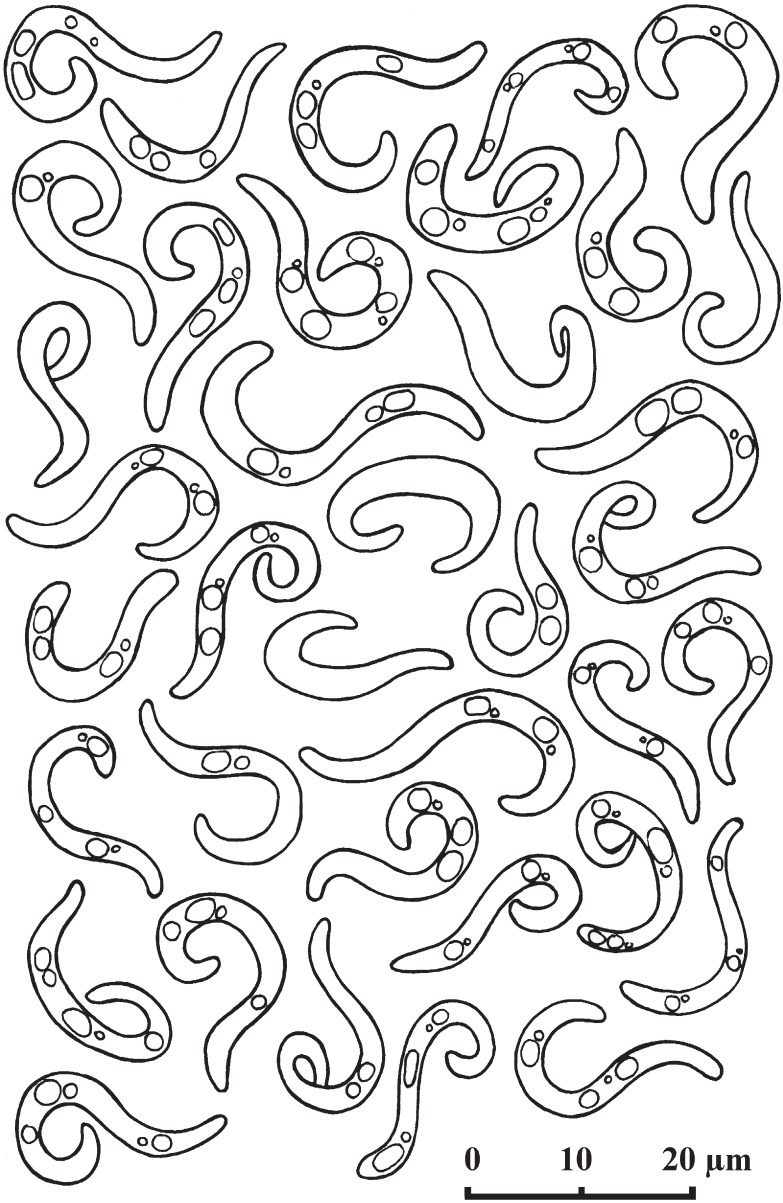

Plate 2. *Subulicystidium curvisporum*. Basidiospores, coll. S.P.Gorjón 2689, holotype.

It grows on decayed wood of *Nothofagus dombeyi*, an endemic southern South American perennial hardwood, in cold rainforests mixed with *Fitzroya cupressoides* (Molina) I.M. Johnst. (*Cupressaceae*), *Luma apiculata* (DC.) Burret (*Myrtaceae*), and *Chusquea culeou* E. Desv. (*Poaceae*).

Additional specimens examined – ***Subulicystidium curvisporum***. **ARGENTINA**. **Chubut**: Los Alerces National Park, Alerzal milenario, on decayed wood of *N. dombeyi*, 3 Mar 2011, leg. S.P.Gorjón, *SPG 3023*.

Subulicystidium longisporum. **ARGENTINA**. **Tierra del fuego**: Depto. Ushuaia, Estancia El Valdez, on dead wood of *Nothofagus betuloides* and *N. pumilio*, 4 Mar 1996, leg. A. Greslebin, *AG 340, 382*; Monte El Martial, on *N. pumilio*, 28 Mar 1998, leg. M. Rajchenberg, *MR 11564*. **CHILE. X Region**: Puyehue, Entre Lagos, close to Gol-Gol river bridge, on decayed wood of *N. dombeyi*, 21 Feb 2010, leg. N. Hallenberg & S.P. Gorjón, *SPG 2600*.

Tulasnella helicospora. **ARGENTINA**. **Río negro**: Mallín Ahogado, El Guadal, on bark of fallen trunk of *Austrocedrus chilensis* (D. Don) Pic.Serm. & Bizarri (*Cupressaceae*), 5 Sep 1995, leg. M. Rajchenberg, *MR 11015*.

Comments — *Subulicystidium curvisporum* belongs to the group of *Subulicystidium* species with long filiform to acicular basidiospores with a Q > 4. Among them, *Subulicystidium longisporum* (Pat.) Parmasto, a common globally distributed species, has the shortest basidiospores with a Q = 4–7. The closest related species seems to be *Subulicystidium perlongisporum* Boidin & Gilles (known from Réunion Island, Tropical Africa, Japan, France, and the Caucasus) with smaller and straight basidiospores (Boidin & Gilles 1988). *Subulicystidium cochleum* Punugu, known from St. Lucia in the Lesser Antilles, has smaller basidiospores with the distal end slightly folded back or twisted and curved; *S. cochleum* differs also in the cystidial ornamentation composed of long acicular crystals arranged in a cylinder and restricted to the middle part (Punugu et al. 1980). The remaining species —*S. allantosporum* Boidin & Gilles, *S. brachysporum* (P.H.B. Talbot & V.C. Green) Jülich, *S. meridense* Oberw., *S. naviculatum* Oberw., *S. nikau* (G. Cunn.) Jülich, *S. obtusisporum* Duhem & H. Michel— have differently shaped basidiospores, usually reniform or cylindrical to fusiform and with a Q<4. Limits between some *Subulicystidium* species are unclear, and spore size frequently overlaps. As Liberta (1980) already stated, it is likely that some species belong to a single species complex.

Key to *Subulicystidium*

1a. Basidiospores acicular, Q >4 2
1b. Basidiospores fusiform, cylindrical to reniform, Q <4 5
2a. Basidiospores (9–)12–16(–18) × (1.8–)2–3 µm, Q = 4–7 . . . . . ***S. longisporum***
2b. Basidiospores longer, Q >9 3
3a. Basidiospores spirally curved, (25–)27–35(–38) µm long . . . . . ***S. curvisporum***
3b. Basidiospores straight or only slightly curved, shorter 4

4a. Basidiospores 20–27 × 2–3 µm, cystidial encrustation restricted to the middle part of the cystidium ..... ***S. cochleum***

4b. Basidiospores 16–25 × 1.5–2.3 µm, cystidia encrusted over the entire length ..... ***S. perlongisporum***

5a. Basidiospores 4–5 µm wide 6

5b. Basidiospores up to 4 µm wide 7

6a. Basidiospores navicular, 10–12 × 4.5–5 µm ..... ***S. naviculatum***

6b. Basidiospores phaseoliform, 7–9.2 × 4–5 µm ..... ***S. nikau***

7a. Basidiospores (2.5–)3–4 µm wide 8

7b. Basidiospores 2–2.5(–3) µm wide 9

8a. Basidiospores shorth cylindrical, 6–8 × 3–3.6 µm ..... ***S. allantosporum***

8b. Basidiospores cylindrical to fusoid, slightly curved, (9–)11–13(–15) × (2.5–)3–4 µm ..... ***S. obtusisporum***

9a. Basidiospores cylindrical, 6.5–8.5 × 2.2–2.5 µm ..... ***S. meridense***

9b. Basidiospores cylindrical to fusiform or banana-shape, (6.5–)7.5–10 × 2–2.5(–3) µm ..... ***S. brachysporum***

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